Record of *Carcharhinus falciformis* (Bibron *in* Müller & Henle, 1839), in Italian waters (Ligurian Sea, Northwestern Mediterranean)

by

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RÉSUMÉ. - Capture de *Carcharhinus falciformis* (Bibron *in* Müller & Henle, 1839) dans les eaux italiennes (mer Ligure, Méditerranée nord-occidentale).

Un spécimen du requin soyeux *Carcharhinus falciformis* (Bibron *in* Müller & Henle, 1841), mâle, de 209 cm LT, a été capturé au large de la côte de Sanremo (mer Ligure, Méditerranée nord-occidentale) comme prise accidentelle de la pêche à l'espadon à la palangre de surface. Cette capture est la première documentée pour les eaux italiennes et présente le signalement le plus septentrional pour cette espèce en Méditerranée.

Key words. - Carcharhinidae - *Carcharhinus falciformis* - MED - Ligurian Sea - Record.

In the Ligurian Sea, pelagic sharks represent a limited part of the commercial by-catch of the professional longline fishery targeting swordfish and tunas; in the framework of EU and Italian programs on the fishery and biology of large pelagic fishes, five species were recorded, being *Prionace glauca* (L., 1758) the most frequently caught, followed by *Isurus oxyrinchus* Rafinesque, 1810, *Lamna nasus* (Bonnaterre, 1788), *Alopias vulpinus* (Bonnaterre, 1788), and *Carcharhinus plumbeus* (Nardo, 1827) (Garibaldi and Orsi Relini, 2000).

On 7th September 2001, a carcharhinid shark, belonging to the genus *Carcharhinus*, was landed at the Sanremo harbour (Western Ligurian Sea); it was caught at the surface, during the night, by a professional swordfish longliner, at approximately 43°43'N-007°47'E, along the Italian continental slope (Fig. 1), together with 4 swordfish specimens: horse mackerel *Scomber scomber* was the used bait. After landing, the shark was brought to the local fish market, where the entire viscera and jaws were collected.

The fish was a male, measuring 209 cm TL (153 cm PRC) and weighing 48 kg (gutted weight); all available morphometric data are reported in table I. Its main characteristics were the relevant interdorsal ridge and the first dorsal fin origin placed well behind the inner, free corner of the pectoral fin. According to the current taxonomy (Garrick, 1982; Grace, 2001), these characters restrict the possible diagnosis only to the silky shark, *Carcharhinus falciformis* (Bibron *in* Müller et Henle, 1839). This classification is also confirmed by jaws analysis (Fig. 2A). The dental formula of the examined specimen was 15-1-15/14-1-14, which is not the commonest (15-2-15/15-1-15) reported by Grace (2001), but falls within the possible range of *C. falciformis* (14 to 16 -1 to 3-14 to 16/14 to 17-1 to 3-14 to 17), as stated by Garrick (1982). Upper jaw teeth (Fig. 2B) were moderately broad, oblique (mainly towards the lateral part of jaw), strongly notched laterally, with a weak notch also present on the medial side; small serrations are present at the base of the upper jaw teeth. Lower jaw teeth are erect and smooth edged. Complete jaws were deposited at the Museo Civico di Storia Naturale "G. Doria" of Genova, as MSNG 54595.

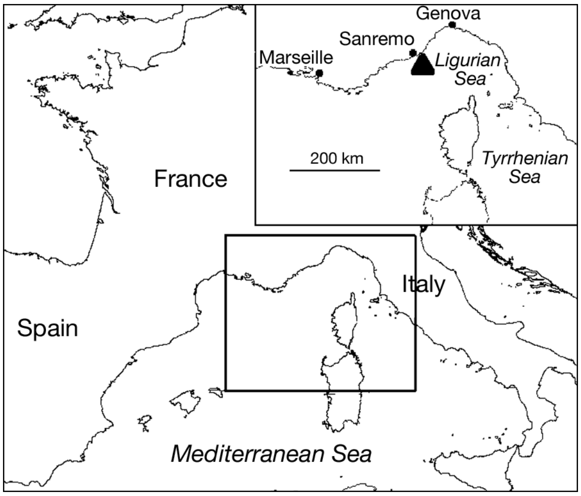

Figure 1. - Western Mediterranean Sea, with emphasis on the geographical location of the present record (▲).

Table I. - Morphometric measurements of the specimen of *C. falciformis* caught in the Ligurian Sea.

Parameters	Size (mm)	Body proportions (% TL)
Total length	2090	–
Fork length	1630	78.0
Precaudal length	1530	73.2
Predorsal length	715	34.2
Prepectoral length	475	22.7
Clasper length	58	2.8

The reduced clasper development (Tab. I) indicates that it was an immature specimen. This is in accord with the results obtained by other authors on the reproductive biology of *C. falciformis* from the equatorial Atlantic Ocean (Hazin *et al.*, 2007), where male maturity is reached at a size bigger than 208 cm TL.

The stomach contents consisted of highly digested fish vertebrae and bones of a single prey belonging to the family Mugilidae, and one upper cephalopod beak. This was a typical octopod beak, measuring 1.1 mm and 3.3 mm respectively in hood length (HL) and crest length (CL). Generally, only lower beaks are considered useful for species identification (Clarke, 1986); however, its large

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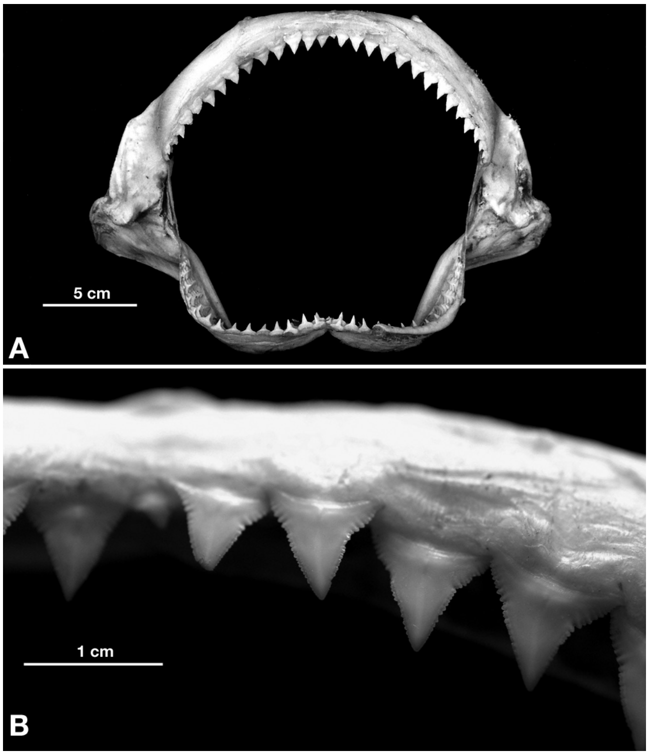

Figure 2. - **A**: Jaws of the *C. falciformis* caught in the Ligurian Sea. **B**: Detail of the dentition: upper left teeth 1-2-3-4 and 5 (only medial half).

size, and comparison with reference material from the Ligurian Sea, allowed to identify prey as *Octopus vulgaris* Cuvier, 1797, which is the largest octopod species in the Mediterranean Sea.

Sharks of the genus *Carcharhinus* are represented in the Mediterranean by at least 8 species (Notarbartolo di Sciara and Bianchi, 1998; Serena, 2005), but there is a great lack of information about abundance and distribution of each species, mainly due to the scarcity of catches and difficulty in their correct identification. Only *C. plumbeus* is widely distributed and quite commonly caught as by-catch of the professional fishery, both in the Northern Mediterranean, as previously mentioned, and along the Southern coasts, from Algeria (Hemida and Labidi, 2001a, 2001b) to the Aegean Sea. Four other species, *C. brevipinna* (Müller & Henle, 1839), *C. brachyurus* (Günther, 1870), *C. limbatus* (Valenciennes, *in* Müller & Henle, 1839) and *C. obscurus* (Lesueur, 1818), have been recorded with different abundance rate both in the Western and Eastern Mediterranean and could be considered rare native or established immigrants. *C. altimus* (Springer, 1950) and *C. falciformis* have been recorded only in the Western Mediterranean, where they probably enter as vagrant individuals (Golani *et al*., 2002).

The presence of three other species needs confirmation. *C. melanopterus* (Quoy & Gaimard, 1824) was listed in the Eastern Mediterranean fauna by past and recent authors (Tortonese, 1951; Fergusson, 1994; Barrull and Mate, 2002); however, considering that no specimens were preserved (Golani *et al*., 2002), its presence is still considered doubtful (Garrick, 1982; Serena, 2005). *C. longimanus* (Poey, 1861) is not confirmed from the region (Fergusson, 1994; Moreno, 2004; Serena, 2005), although it was listed in the Mediterranean fauna by Barrull and Mate (2002) on the basis of some earlier poorly described records. *C. acarenatus* (Moreno & Hoyos, 1983) was listed in the Mediterranean fauna by Moreno (2004) and Barrull and Mate (2002), but other author (Serena, 2005) consider the species a junior synonym of *C. brachyurus*.

C. falciformis is abundant in the Eastern Atlantic, but was so far reported only sporadically in the Western Mediterranean, limited to the Alboran Sea and along the Algerian and southern Spanish coasts (Barrull and Mate, 2002; Hemida *et al*., 2002; Moreno, 2004). Considering this geographical distribution, the present specimen represents the first record for Italian waters and the most northerly record of the species in the Mediterranean Sea up to date.

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